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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,394	01/15/2004	You-seop Lee	249/435	4953

7590 03/09/2006
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EXAMINER

DO, AN H

ART UNIT PAPER NUMBER

2853

DATE MAILED: 03/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/757,394

Applicant(s)

LEE ET AL.

Examiner

An H. Do

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 15-20, 25 and 26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 21-24 and 27 is/are rejected.
- 7) ☒ Claim(s) 13 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date See Attached 1449s.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Species B readable on claims 1-14, 21-24 and 27, in the reply filed on 02 February 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 15-20, 25, and 26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 02 February 2006.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. The information disclosure statements (IDS) submitted on 15 January 2004, 22 June 2004, and 01 April 2005 were filed and are being considered by the examiner.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-10, 22-24 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Murakami et al (US 6,158,844).

Murakami et al disclose the following claimed features:

Regarding claim 8, an ink-jet printhead (Figure 14), comprising: a manifold (58) formed in a passageway plate (head block 40) to supply ink (9); a nozzle (holes 14) to be supplied with ink formed in a nozzle plate (13) provided on the passageway plate (40), the ink (9) being supplied by a capillary force; and a ground electrode (16) and a source electrode (15) arranged near an outlet of the nozzle (14), the ground electrode (16) and the source electrode (15) forming an electric field due to an application of a voltage thereto and ionizing air near the outlet of the nozzle to produce an ion wind to decrease a pressure near the outlet of the nozzle to expel the ink contained in the nozzle (column 18, lines 7-26).

Regarding claim 9, wherein the ground electrode (16) is disposed adjacent (Figure 14 shows electrode 16 formed on the bottom surface of nozzle plate 13) the outlet of the nozzle (14) and the source electrode (15) is disposed a predetermined distance (Figure 14 shows electrode 15 formed on the top surface of nozzle plate 13) from the ground electrode (16) away from the outlet of the nozzle.

Regarding claim 10, wherein the ion wind flows toward the outlet of the nozzle (14) and flows upward at a front portion of the outlet of the nozzle (Figure 15 shows ink particles 8 expelling upward towards the medium 17).

Regarding claim 22, wherein the ground electrode (16) and the source electrode (15) surround the outlet of the nozzle (Figure 14).

Regarding claim 23, wherein a shape of the ground electrode (16) and the source electrode (15) is selected from the group consisting of circular, oval, and polygonal (Figure 14).

Regarding claim 24, wherein the source electrode (15) has a cross-sectional area smaller than a cross-sectional area of the ground electrode (Figure 14 shows electrode 15 narrower than electrode 16).

Regarding claim 27, wherein the nozzle is a plurality of nozzles (column 11, lines 36-37), each formed in the nozzle plate (13), and one of a plurality of ground electrodes (16) and one of a plurality of source electrodes (15) are arranged near each of the plurality of nozzles (14), and wherein ink (9) may be expelled (ink particles 8) from each of the plurality of nozzles simultaneously, sequentially, or individually (Figure 15).

Regarding method claims 1-7, Murakami et al also therefore disclose a method of expelling ink in view of the fact that the above structure is taught.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 11, 12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al (US 6,158,844) in view of Pletcher et al (US 6,028,615).

Murakami et al disclose the claimed invention except for reciting the following features:

Regarding claims 11 and 21, further comprising: a tapered recess having a predetermined depth formed at a periphery of the outlet of the nozzle on a surface of the nozzle plate, the ground electrode and the source electrode being arranged within the recess.

Regarding claim 12, wherein the recess has a shape of a ring surrounding the nozzle.

Pletcher et al teach the following:

Regarding claims 11 and 21, further comprising: a tapered recess having a predetermined depth (Figure 2, well 114) formed at a periphery of the outlet of the nozzle (115) on a surface of the nozzle plate (120), the ground electrode and the source electrode (112) being arranged within the recess (114).

Regarding claim 12, wherein the recess has a shape of a ring surrounding the nozzle (Figure 1).

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to include a tapered recess having electrodes formed within, as taught by Pletcher et al into Murakami et al, for the purpose of controlling the size of the plasma (column 4, lines 1-10).

Allowable Subject Matter

9. Claims 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claims 13 and 14 is the inclusion of the limitation of an ink-jet printhead that includes a recess within which the electrodes being arranged, wherein a side of the recess adjacent the outlet of the nozzle is inclined to permit the ion wind to flow in an inclined direction toward a front portion of the outlet of the nozzle. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takeuchi et al (US 5,895,702) disclose a ceramic member having a thin plate with a plurality of holes and ion source and electrode. Humberstone et al (US 6,127,082) disclose an apparatus for discharging liquid to a substrate by applying electric field supplied by electrode to the liquid.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday (Flexible).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AD
March 3, 2006



An H. Do
Examiner
Art Unit 2853